CLAIMS

1. A device for measuring the flow m and at least one material parameter k of a fluid, wherein the material parameter k depends on a thermal conductivity of the fluid, said device comprising

a heating for generating, in said fluid, a region having non-homogeneous temperature,

several sensors for determining at least two measured quantities t1, t2 depending on fluid temperatures in a range of influence of the heating, wherein the measured quantities are different functions $t1 = f1(m, k)$ and $t2 = f2(m, k)$ of the flow m and the material parameter k, and

a processing circuit for determining the flow m and the material parameter k from the measured quantities t1, t2.

2. The device of claim 1 wherein the sensors comprise a first and a second temperature detector, wherein the temperature detectors are arranged beside the heating and wherein the measured quantities t1 and t2 are derived from signals of the two temperature detectors.

3. The device of claim 2 wherein, as seen in a flow direction of the fluid, the first temperature detector is arranged before the heating and the second temperature detector is arranged after the heating.

4. The device of claim 3 wherein the measured quantity t2 corresponds to the fluid temperature at the second temperature detector.

5. The device of claim 2, wherein the measured quantity t1 corresponds to a difference between the fluid temperatures at the two temperature detectors.

6. The device of claim 1 further comprising a fluid temperature detector arranged outside an area of influ-

ence of said heating, wherein the processing circuit is designed for using a signal from the fluid temperature detector when determining the material parameter k and/or the flow m.

7. The device of claim 1 further comprising a semiconductor chip, wherein the heating and the sensors are integrated on the semiconductor chip.

8. The device of claim 1 wherein the fluid is a mixture of at least to substances and wherein the material parameter k is indicative of a mixing ratio between the two substances.

9. the device of claim 1 wherein the material parameter k is the thermal conductivity of the fluid.

10. The device of claim 1 comprising exactly one heating.

11. An apparatus for mixing at least two fluids with different thermal conductivities and comprising at least one device for measuring a mixing ratio k of the two fluids and a flow m of the mixed fluids, said device comprising

a heating for generating, in said fluid, a region having non-homogeneous temperature,

several sensors for determining at least two measured quantities t1, t2 depending on fluid temperatures in a range of influence of the heating, wherein the measured quantities are different functions t1 = f1(m, k) and t2 = f2(m, k) of the flow m and the mixing ratio k, and

a processing circuit for determining the flow m and the mixing ratio k from the measured quantities t1, t2.

12. The apparatus of claim 11 comprising a control unit for monitoring and/or regulating the mixing ratio.

13. The apparatus of claim 11 adapted for mixing at least three fluids comprising

a first mixing unit for mixing a first and a second of the fluids into a first mixture,

a second mixing unit for mixing the first mixture and a third of the fluids into a second mixture, and

at least two of said devices for measuring a mixing ratio k of the two fluids and a flow m of the mixed fluids,

wherein, as seen in a flow direction of the fluids, a first of said devices is arranged between the first and the second mixing unit and a second of said devices is arranged after the second mixing unit.

14. An apparatus for mixing at least two fluids with different thermal conductivities, said apparatus comprising at least one device of claim 1.

15. A method for measuring a flow m of a fluid and a material parameter k depending on a composition of the fluid, said method comprising the steps of

bringing said fluid into contact with a heating for generating an region having non-homogeneous temperature in said fluid,

determining at least two measured quantities t1, t2 depending on fluid temperatures in a range of influence of the heating, wherein the measured quantities are different functions $t1 = f1(m, k)$ and $t2 = f2(m, k)$ of the flow m and the material parameter k, and

determining the flow m and the material parameter k from the measured quantities t1, t2.

16. The method of claim 15 wherein the fluid is a mixture of a first and a second material and the material parameter k indicative of a mixing ratio between the materials.

17. The method of claim 16 further comprising the step of monitoring or regulating the mixing ratio using the material parameter k.

18. The method of claim 15 wherein the mixture is fed to a burner and the material parameter k is used for controlling or monitoring the burner.

19. The method of claim 15 wherein the mixture is fed to a fuel cell and the material parameter k is used for controlling or monitoring the fuel cell.